

Patent Claims

1. An apparatus for power control by phase gating of an AC voltage, which supplies an electrical load (14), and for reduction of harmonics which are created by the phase gating, in particular up to a region of 4 kHz, preferably in the region of the third harmonic, having an electric motor (15) as the load (14), having a first circuit element (12) (TRIAC) which is connected in series with the load (14) and is driven by a control device (20) in order to carry out phase gating, and having a resistance element (34), **characterized** in that a second circuit element (34) is provided in series with the resistance element (32), with the series circuit being arranged in parallel with the first circuit element (12) and with the control device (20) being designed such that it drives the second circuit element (34) shortly before the first circuit element (12) and switches it to the on state for a short time period and in that the resistance element (32) is arranged in an air flow which is produced by the electric motor (15) in order to cool it.

2. The apparatus as claimed in claim 1, characterized in that the resistance element (32) has at least two resistance segments which are arranged in series.

3. The apparatus as claimed in claim 2, characterized in that the resistance segments are arranged within the electric motor.

4. The apparatus as claimed in claim 1, characterized in that the resistance element is in the form of a resistance wire.

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5. The apparatus as claimed in claim 2 or 3, characterized in that each resistance segment is in the form of a resistance wire.

6. The apparatus as claimed in claim 4, characterized in that the resistance wire is provided in the form of at least one turn on a winding of the electric motor.

5 7. The apparatus as claimed in one of the preceding claims, characterized in that the second circuit element (34) is a TRIAC.

10 8. The apparatus as claimed in one of the preceding claims, characterized in that the resistance element (32) is a non-reactive resistor.

15 9. A method for harmonic reduction in the range up to 4 kHz, preferably of the third harmonic, for power control of an electric motor by phase gating, having the following steps:

20 - a first circuit element (12) is driven on the basis of a first selected trigger angle in order to carry out a phase gating process,

25 - a connection (30; 32, 34) which bridges the first circuit element (12) and has a resistance is switched on briefly at a time before the triggering of the first circuit element, and

- the connection which has a resistance is cooled by the electric motor.